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### **REMARKS**

This amendment is responsive to the final Office Action of February 11, 2008. Reconsideration and allowance of claims 1-18 are requested.

### **The Office Action**

Claims 1, 2, 4-7, 10-12, 14, and 15 stand rejected under 35 U.S.C. § 102 as being anticipated by Young (US 4,545,738) and under the new ground of rejection of 35 U.S.C. § 103 as being obvious over Young in view of Beale (US 6,065,637).

Claim 3 stands rejected under 35 U.S.C. § 103 over the new ground of rejection of Young in view of Beale, further in view of Claudet (US 4,840,032).

Claims 5, 8, and 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over the new ground of rejection of Young in view of Beale, further in view of Heinzle (US 4,735,862).

The previous Notice of Allowability of claims 8 and 9 was withdrawn.

Claims 13 and 16-18 stand allowed.

### **The Present Amendment Should Be Entered**

First, the present amendment places the application in condition for allowance. For the reasons set forth below, the amendment to claim 1 renders claim 1 allowable.

Claim 8 was previously indicated as containing allowable subject matter. However, in the last Office Action, claim 8 was broadened to include the subject matter of claim 9, which was also indicated as containing allowable subject matter. This amendment now returns claim 8 exactly to its originally-allowed form. Accordingly, this amendment places claim 8 in condition for allowance.

Second, the finality of the Office Action of February 11, 2008 was premature. In the preceding Office Action, the Examiner indicated that claims 8 (gas-bearing nozzle formed by a wire inserted in a nozzle bore) and claim 9 (a gas permeable plug of sintered material) were both allowable. Amendment B placed claim 8 in independent form including all of the subject matter of its parent claim and setting forth the subject matter of allowable claim 8 and allowable claim 9 in the alternative. Because claim 8 merely placed dependent claims which were indicated as

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being allowable in independent form, it is submitted that the new ground of rejection against claim 8 was not necessitated by applicant's amendment.

Moreover, in the Office Action of October 4, 2007, the Examiner indicated that claim 9 was allowable. Claim 9 was not amended in preceding Amendment B. Its parent claim was amended with a narrowing limitation. Parent claim 1 was not broadened in any respect. It is submitted that the Examiner's withdrawal of the allowability of claim 9, which was not amended in any broadening way (only in a narrowing way) was not necessitated by the applicant's Amendment B. Rather, the Examiner changed his position. Although the Examiner is entitled to change his position, the applicant should not be penalized by such a change in position by being foreclosed of the right to submit amended claims in response to the Examiner's new position.

Third, the Examiner's new ground of rejection with regard to claim 12 appears to be procedurally erroneous. It should be noted that claim 12 depends from claim 8. Claim 12 is rejected based on Young in view of Beale; whereas, its parent claim is rejected based on Young in view of Beale, further in view of Heinzle. It is submitted that the Examiner's purported rejection of claim 12 on a smaller combination of references that its parent claim 8 is procedurally erroneous.

**The Claims Distinguish Patentably  
Over the References of Record**

First, the applicant disagrees with the Examiner and asserts that claim 1 is not obvious over the combination of Young and Beale, and more emphatically, that claim 1 is not anticipated by Young.

In the first paragraph of page 3 of the Office Action, the Examiner concedes that "Young does not disclose the use of gas-bearing inlets in the cylindrical wall". In other words, Young does not show the claimed feature of the gas-bearing nozzles being arranged in the cylinder housing. Accordingly, claim 1 is not anticipated by Young.

The Examiner asserts that Beale cures this shortcoming of Young directing the applicant's attention to bearings 813 and 831 of Figures 3 and 4. The applicant disagrees. Air bearings 813 and 831 refer to the gas embedded between the piston 810, 830 and the cylinder wall surrounding the piston as described at column 7,

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lines 12-13 and 41-42. The description of Figures 3 and 4 does not mention gas-bearing nozzles for gas-supporting the piston. Rather, it is submitted that air is compressed into the air bearings by the force of the internal combustion.

**Claim 1** calls for at least one of the gas-bearing nozzles to be arranged in the cylinder housing and more specifically for it to be arranged facing the piston wall. Neither Young nor Beale, nor the combination thereof disclose or fairly suggest the concept of a gas-bearing nozzle arranged in the cylinder housing, much less arranged in the cylinder housing and facing the piston wall. In Young, the gas-bearing nozzles are in the piston and point outward. There are no gas-bearing nozzles in the cylinder housing. Beale does not disclose any gas-bearing nozzles in the sense of claim 1. In Figure 4, note check valves 841 and 842 in the exhaust lines 843 and 844 which limit the flow of fluid in the discharge direction. Note that the piston 810 in Figure 3 of Young acts as a valve. The springs 823 push the piston upward during the compression stroke to compress the fluid in the combustion chamber 812. When the combustion chamber fires, the piston is driven downward, causing combusted gases to escape through exhaust 810 and permitting fresh air to be fed into the chamber via intake port 816. Although a layer of air is formed between the piston and the cylinder, Beale does not disclose any gas-bearing nozzles for maintaining such air layer or for pressurizing such air layer.

Thus, Young teaches that the gas-bearing nozzles should be disposed in the piston such that movement of the piston enables fluid to be moved under pressure through the gas-bearing nozzles. Beale does not teach or fairly suggest moving gas-bearing nozzles to the cylinder wall. Although Beale maintains a gas-bearing or air interface between the piston 810 and the cylinder, Beale has no nozzles interior or exterior for pressurizing the air bearing 813 sufficiently to maintain the piston supported by the air bearings 813. Rather, it is submitted that pressure in the air bearing comes from the combustion of the fuel and air mixture in the combustion chamber 812 which forces air, under pressure, between the piston and the housing 811.

Accordingly, it is submitted that **claim 1 and claims 2-4, 6, 7, 9-11, and 14-15 dependent therefrom** are not anticipated by Young and distinguish patentably and unobviously over the combination of Young and Beale.

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**Claim 8** has been returned to the exact form which it had when the Examiner indicated it to be allowable. Accordingly, it is submitted that **claim 8 and claims 5 and 12 dependent therefrom** distinguish patentably and unobviously over the references of record.

**Claim 9** calls for the gas-bearing nozzle to be formed by a gas-permeable plug of sintered material. It is submitted that one of ordinary skill in the art would not try to place a plug of sintered material into the fresh air intake port 816 of Beale because such plug of sintered material would impair the breathing of the combustion engine. That is, blocking the intake port 816 would starve the combustion engine for fresh air, causing the combustion engine to fail to function for its normal and intended purpose. Although Heinze may show that sintered gas nozzles are old, Heinze provides no motivation to place a sintered element into the fresh air intake port of an internal combustion engine. Accordingly, **claim 9** is patentable over the references of record.

Dependent **claim 12**, which incorporates the subject matter of its parent claim 8, calls for the gas-bearing nozzle to be arranged in the cylinder housing and for the gas-bearing nozzle to be formed of either a wire inserted into a nozzle bore, or a gas-permeable plug of sintered material. The combination of Young and Beale applied by the Examiner against claim 12 do not disclose this combination. Neither Young nor Beale disclose nor fairly suggest using a gas-permeable plug of sintered material, or a wire inserted into a nozzle bore to form a gas-bearing nozzle. Accordingly, it is submitted that **claim 12** is in condition for allowance.

**Claim 14** calls for a stirling cooler which includes the piston according to claim 1. It is submitted that the internal combustion engine of Beale is incompatible with the Stirling engine of claim 14. It is submitted that one designing a cold finger of a stirling cooler would not look to the internal combustion engine arts, much less seek to use an air bearing arrangement in which the hot combustion gases are used to pressurize the air bearing.

Accordingly, it is submitted that **claim 14** distinguishes over the references of record for these additional reasons.

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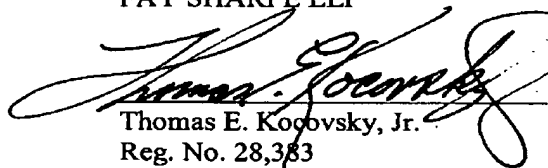
CONCLUSION

For the reasons set forth above, it is submitted that the present amendment should be entered, and that claims 1-18 distinguish patentably over the references of record and are otherwise in condition for allowance. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he is requested to telephone Thomas E. Kocovsky, Jr. at (216) 861-5582.

Respectfully submitted,

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